

Introduction to Hazardous Waste Regulations Webinar Series

**Office of Environmental
Assistance**

**Office of Waste
Management and
Radiological Protection**



Introduction to Hazardous Waste Regulations Webinar Series

**Waste Characterization and
Generator Status**



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Housekeeping

- **All lines will be muted**
- **Questions can be sent to us via the question/chat box**
- **We will record webinar and post online**
- **Notes page**

Environmental Assistance Center (EAC)

**Phone: 1-800-NO2-WASTE
(1-800-662-9278)**

**Hours: 8:00 AM to 4:30 PM
Monday – Friday**



Technical Assistance Services Include:

**Air
Waste
Water**

**Environmental Audit Privilege
Site Remediation
Permit Coordination**



WHAT TYPE OF WASTES DO I GENERATE?



Do I Need to Know All of This?

Hazardous waste regulations...

apply to all businesses, including municipalities, hospitals, & service industries, not just manufacturing industries.

are written broadly to address hazards posed by all waste streams.

Why Cover These Topics?

Hazardous waste regulations require each business to...

Evaluate the character & composition of their wastes.

Determine the total weight of all hazardous waste generated each month.

Determine their legal disposal options.



Why Cover These Topics?

Less hazardous waste = less regulation & more disposal options under the law.

There is no one best answer for how to dispose of waste for all businesses & locations.

Waste Characterization

Regulations requiring waste characterization:

Act 451, Michigan Natural Resources & Environmental Protection Act:

Part 111, Hazardous Waste

Part 121, Liquid Industrial Waste

Part 115, Solid Waste

Part 169, Scrap Tires

Act 368, Michigan Public Health Code:

Part 138, Medical Waste Regulatory Act

Part 2, Ionizing Radiation Rules

Federal Toxic Substance Control Act (TSCA)



Waste Characterization

Where do I start?

Perform a waste survey to identify what wastes are generated at your facility.

Tour your entire facility and inventory all waste streams.

Don't overlook identifying & characterizing ALL waste streams.

Waste Survey



Drains



Discontinued lines

Waste Survey



Catch Basins

Waste Survey

Office Activities

Electronics



Batteries



Electric lamps



Thermostats

Waste Survey

Aerosol Cans



Can crushing & puncturing

Ignitable & could have TCLP issues



Waste Survey

Remodeling/Demolition Debris

Demolition debris



Gym flooring



Abrasive blasting



Waste Survey

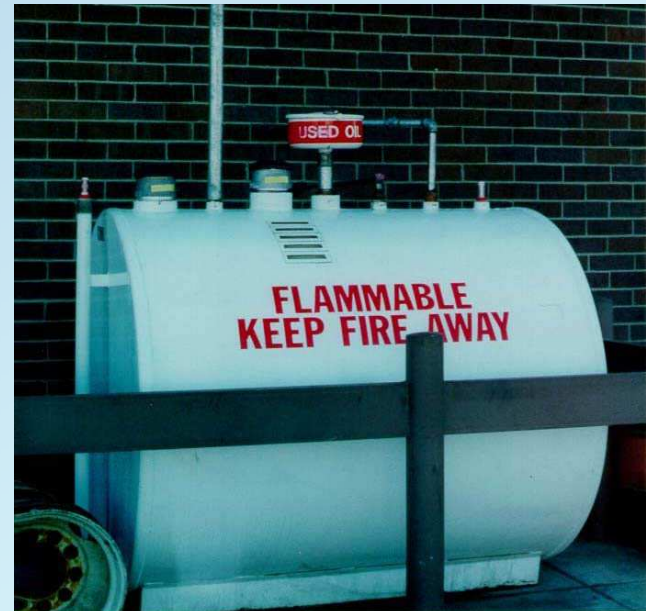
Fleet Maintenance



**Antifreeze &
Mercury Switches**



Parts Washer



Used Oil

Waste Survey

Laboratory Waste



Art Class Waste

Waste Survey

Rags & Textiles



**Management option to use recycling exemption:
Commercially launder**

RAGS & TEXTILES

RULE CHANGE

(EPA ONLY, NOT ADOPTED BY MICHIGAN)

Federal rule took effect January of 2014

Excludes wipes that are contaminated with solvents listed as hazardous wastes under RCRA that are cleaned or disposed of properly.

To be excluded, solvent-contaminated wipes must be managed in closed, labeled containers and cannot contain free liquids when sent for cleaning or disposal.

Requires records and cannot accumulate wipes for longer than 180 days.



Waste Characterization

Who does it?

Do the waste characterization yourself.

Hire a consultant.

Use the disposal company services.

Use a combination of the above.

Waste Characterization

How do you do it?

Knowledge

- MSDS
- Facility Process Information
- Technical Information
- Manufacturer Information
- Hazardous Waste Listings

Testing



Waste Characterization

Cautionary Example:

Analyses of wastes from dry cleaning processes using the newer "green" solvents are testing positive for chromium!

Waste Characterization Basics

Characteristic Hazardous Waste (D wastes)

A waste stream found to be ignitable, corrosive, reactive, and/or toxic by testing.

Listed Hazardous Waste (F, K, P & U wastes)

A common waste stream known to be hazardous without testing.

Hazardous Waste Mixture Rule

Mixture of a listed hazardous waste with other non-hazardous wastes is a listed hazardous waste.

Hazardous Waste Derived From Rule

Residues derived from treating a listed hazardous waste is listed hazardous waste.



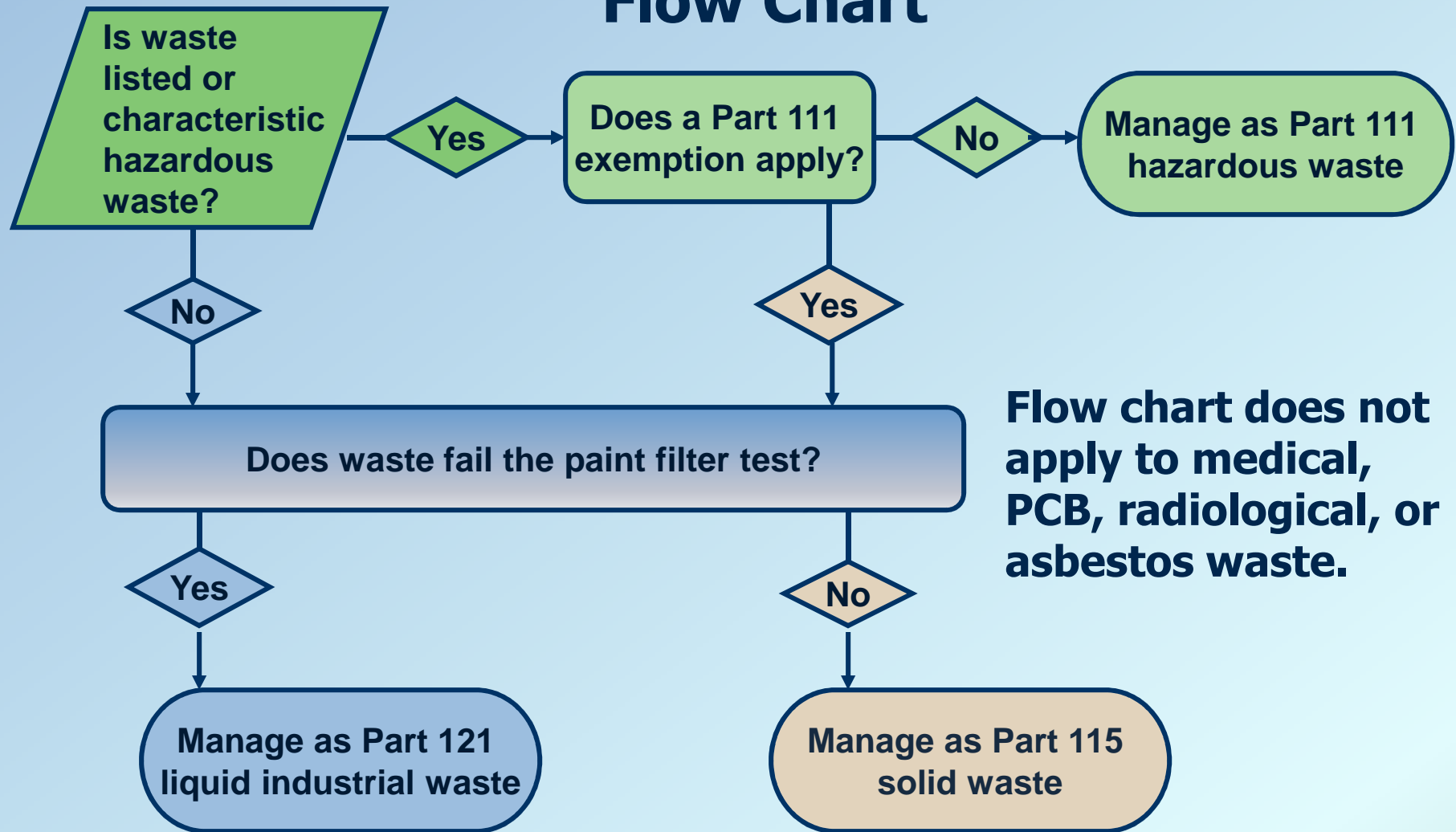
Waste Characterization

Basic Steps

- 1. Is waste characteristic? Analytic test or by knowledge (SDS, knowledge of process, etc.).**
- 2. Is waste listed? Review lists of waste types & codes in rules.**
- 3. Does an exclusion or exemption apply?**
- 4. Do other regulations apply? (liquid industrial or solid waste, etc.)**
- 5. Create & maintain records of characterization for at least 3 years from the date waste was last shipped offsite.**
- 6. Re-characterize if there is a change in process or materials.**



Waste Characterization Flow Chart



Waste Characterization

Step 1

Listed Hazardous Waste

Waste Characterization

What are listed hazardous wastes?

F Codes (Table 203a) – Wastes from non-specific sources (e.g. spent chlorinated solvents, metal treatment wastewaters & sludges).

K Codes (Table 204a) – Wastes from specific industries (*Rule change 11/13 – Michigan Haz Wastes 001K and 002K rescinded*).

P & U Codes (Table 205a-c) – Commercial chemical products, off-specification products, container and spill residues including some Michigan only U Codes (e.g., formaldehyde, parathion, benzene, DDT, xylene) (*Rule change 11/13 – Some Michigan Haz Wastes rescinded*).

P Codes are all acutely hazardous.



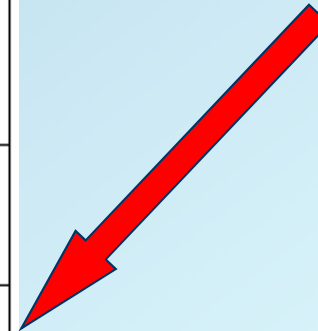
Waste Characterization

Listed Hazardous Waste Codes

70

Table 203a		
EPA Hazardous Waste Number	Hazardous Waste From Nonspecific Sources	Hazard Code
F020	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process, of tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives. This listing does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol	(H)
F021	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process of pentachlorophenol or of intermediates used to produce its derivatives	(H)
F022	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the manufacturing use as a reactant, chemical intermediate, or component in a formulating process of tetra-, penta-, or hexachlorobenzenes under alkaline conditions	(H)
F023	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production of materials on equipment previously used for the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process of tri- and tetrachlorophenols. This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol	(H)

Acutely hazardous when "H" appears in Hazard Code Column.



Waste Characterization

Step 2

Characteristic Hazardous Waste (Rule 212)



Waste Characterization

What are characteristic hazardous wastes?

Characteristic Hazardous Waste & Codes:

Ignitable - D001

Corrosive - D002

Reactive - D003

Toxic - D004 – D043 (Table 201a)

**Severely Toxic – 001S - 007S
(Table 202, includes dioxins & furans)**



Characteristic Hazardous Waste Common Tests

Flash point — Used for testing Ignitability < 140 F (D001)
Examples: paints, solvents

pH — Used for testing corrosivity ≤ 2 or ≥ 12.5 (D002)
Examples: acids, bases

Reactivity — Test as required for DOT classification for materials that are unstable at normal conditions, reacts violently with water, explode, and/or emit toxic gas (D003)
Examples: lithium hydride & trichlorosilane

Characteristic Hazardous Waste Common Tests

TCLP (Toxicity Characteristic Leaching Procedure) -

Used for testing leaching potential for Table 201a hazardous constituents (D004-D043)

Examples: Paints or sludges containing metals or MEK, contaminated media

Total Halogens - Used for testing used oils for chlorine, fluorine, bromine, etc. to determine if a “presumed” hazardous waste

Waste Characterization

Step 3

Exemptions and Exclusions

(Rules 202, 203, 204, 206, 207 and 228 of Part 111 -not all inclusive)



Waste Characterization

What are exemptions & exclusions?

Wastewater discharges to POTW's that are ***approved*** by that sewer authority are exempted at the point of discharge to the sewer.

Batteries, pesticides, mercury devices, electric lamps, pharmaceuticals, consumer electronics & antifreeze handled as Universal Waste enjoy a ***partial exemption***.

Wastes that are used or reused in a process to make a product are excluded provided there is no reclamation - ***Beware of sham recycling & get DEQ concurrence on exemption. Supporting documents required.***



Waste Characterization

What are exemptions & exclusions?

Laboratory samples are exempt until being discarded.

Used oils that are recycled.

Petroleum contaminated media from leaking UST systems that fail the TCLP for D018 – D043 only & are being remediated under DEQ approval pursuant to Part 213.

Off-specification fuel (gasoline, kerosene, diesel, etc.) being recycled for use as fuel or burned as fuel.



Waste Characterization

What are exemptions & exclusions?

Materials remaining in manufacturing units that would otherwise be hazardous wastes - if taken out of service the material becomes a hazardous waste (degreasers, paint pots).

Laundered rags that are reused that would otherwise be a hazardous waste.

Hazardous wastes from which precious metals are recovered (partial exemption).

Dredge spoils from projects permitted by the U.S. Army Corps of Engineers or DEQ.



Waste Characterization

What are exemptions & exclusions?

Recycled materials (***not all*** see 40 CFR, Part 261.2, Table 1). [*Some reclaimed materials not solid wastes under RCRA, although they exhibit a haz waste characteristic (e.g., commercial chemical products, sludges and by-products. Also, commercial chemical products speculatively accumulated are not solid wastes under RCRA.*]

Household waste, including single & multiple residences, hotels & motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, & day-use recreational areas.

Empty container residues



Empty Containers (Rule 207)

After all *non-acute hazardous waste* or liquid industrial waste has been removed using common practices:

No more than 1 inch or not more than 3.0% by weight of the total capacity of the container for containers less \leq to 119 gallons.

No more than 1 inch or not more than 0.3% by weight of the total capacity of the container for containers $>$ than 119 gallons.

Empty Containers (Rule 207)

Acute Hazardous or Severely Toxic Waste:

Triple rinse with appropriate solvent or cleaned by proven equivalent method.

Remove inner liner that prevented contact with container.

If listed due to characteristic, empty if no longer exhibits the characteristic.

Rinse water/removed residue would be hazardous waste based on knowledge.



Empty Containers

(Rule 207)

Compressed Gas:

Container pressure is equal to atmospheric pressure.

Container is not clogged.

No audible liquids in container when shaken.

Waste Characterization

Step 4

Liquid Industrial Waste

Waste Characterization

What is Liquid Industrial Waste?

(Part 121 of Act 451)

Determine by using the Paint Filter Test, Method 9095 in EPA SW-846.

If there are any free liquids in the waste or if the waste is thinner than butter at or < 100 F, it should be managed as a liquid industrial waste.

Waste Characterization

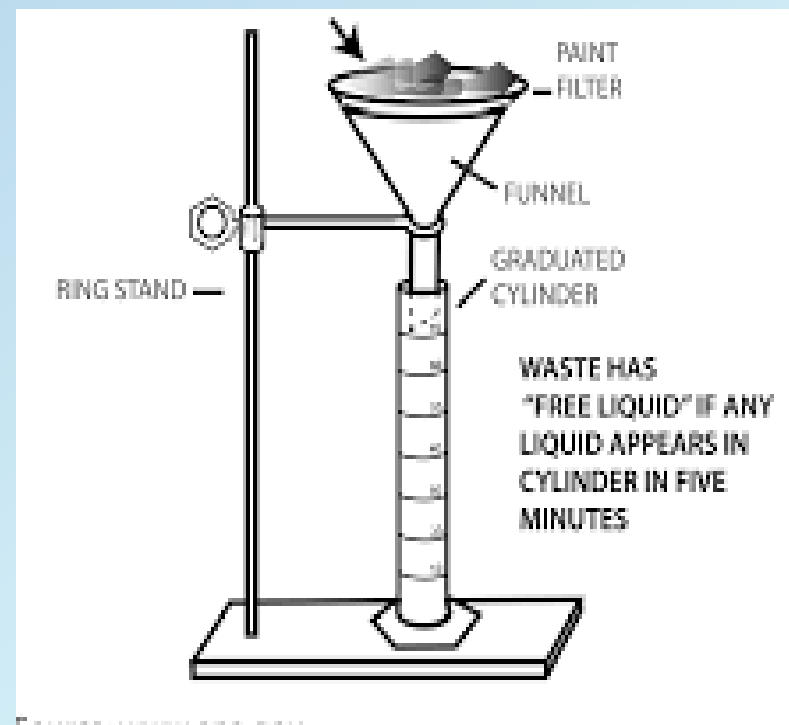
What is Liquid Industrial Waste?

**Use fine mesh paint filter
#60**

**100 ml or 100 g of waste
material (sorbents or other
solids cut to <1 cm.**

Drain for 5 minutes

**If ANY liquid comes through,
the waste fails the test.**



Waste Characterization

What is Liquid Industrial Waste?

Liquid hazardous wastes from a CESQG.

Some wastewater including most mobile power washing wastewater, carpet cleaning wastewater, food processing wastewaters.

Most sludges from trench drains or blind sumps (unless there's been a release making it a hazardous waste).

Includes liquid wastes from other locations besides "industrial" sites (e.g. municipal, health care, etc.).



Waste Characterization

What is Liquid Industrial Waste?

Most antifreeze

Storm sewer cleanout waste

Grease trap waste

Off-specification fuels being recycled

Most used oils being recycled

Used Oil

Used oil cannot be mixed with halogenated listed waste in Michigan.

RCRA allows CESQG to mix halogenated listed hazardous waste with used oil and for the used oil to maintain its regulatory status as used oil.

Part 111 does not authorize this mixing!!



Used Oil

Used oil that contains more than 1,000 PPM halogens is presumed to be a hazardous waste per Rule 203(1)(e).

Used oil with a total halogen content of 1,000 PPM or greater must be proven, via testing it is not contaminated with halogenated listed waste.

Used Oil

Rebutting the presumption is complicated and expensive.

Most transporters & processors will not accept used oil >1000 PPM halogens

Quick screening for total halogens is usually performed using on-site testing equipment like Chlor-D-Tect and shipments with unknown halogen origins are rejected.

Used Oil

If used oil contains >1000 PPM halogens, it is presumed to have been mixed with listed halogenated hazardous waste unless rebutted.

Can also use knowledge of waste to characterize, if feasible, but adequate documentation is required.

Used Oil

If >1000 PPM halogens present, additional, costly testing is required to “rebut” whether used oil was mixed with hazardous waste:

Analyze for all relevant halogenated Appendix VIII constituents. If > 100 PPM for any single constituent, used oil fails and must be managed as a hazardous waste.

Conclusion: Do not mix used oil with other wastes to facilitate required recycling and avoid being required to manage the mixture as a hazardous waste.



Waste Characterization

Liquid Industrial Waste Codes

WASTE STREAM	WASTE CODE	CONSOLIDATED WASTE CODE
Mixed Solvents	007L	007LC
Pharmaceutical	014L	014LC
Crankcase Oil	017L	017LC
Coolants and Water Soluble Oils	019L	019LC
Other Oil	021L	021LC
Brine	022L	022LC
PCB	026L	026LC
Other wastes	029L	029LC
Antifreeze	030L	030LC
Storm Sewer Cleanouts	031L	031LC
Sanitary Sewer Cleanouts	032L	032LC
X-Ray/Photo Cleaning Solutions	033L	033LC
Water Based Cleaning Solutions	034L	034LC
Car Wash Sludges	035L	035LC
Grease Trap Wastes	036L	036LC

Waste Characterization

Step 5

Waste Characterization Record (Rule 307)



Waste Characterization

Waste Characterization Records

Records for each waste stream may include:

Waste type/description

Source of waste

Test results

Waste analyses records

MSDS

Sample procedure

Representative sample information

Optional waste characterization form

Disposal facility waste profile

Recharacterize if there is a process or materials change!



Waste Characterization

Step 6

**Re-characterize if
process or material change**



Waste Characterization

Resources

Use these resources to guide and document your waste characterization determination

Include with your waste characterization record:

Receiving facility waste profile

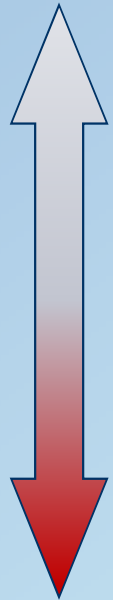
LDR notifications

LDR waste analysis plans



Hazardous Waste Generator Status

Less
Regulation



**Conditionally Exempt Small
Quantity Generator (CESQG)**

Small Quantity Generator (SQG)

Large Quantity Generator (LQG)

**More
Regulation**



Hazardous Waste Generator Status

Conditionally Exempt Small Quantity Generator (CESQG) (Rule 205)

**Monthly hazardous waste generation < 220 lbs or
~ 1/2 drum.**



**Total hazardous waste accumulation always
< 2200 pounds.**

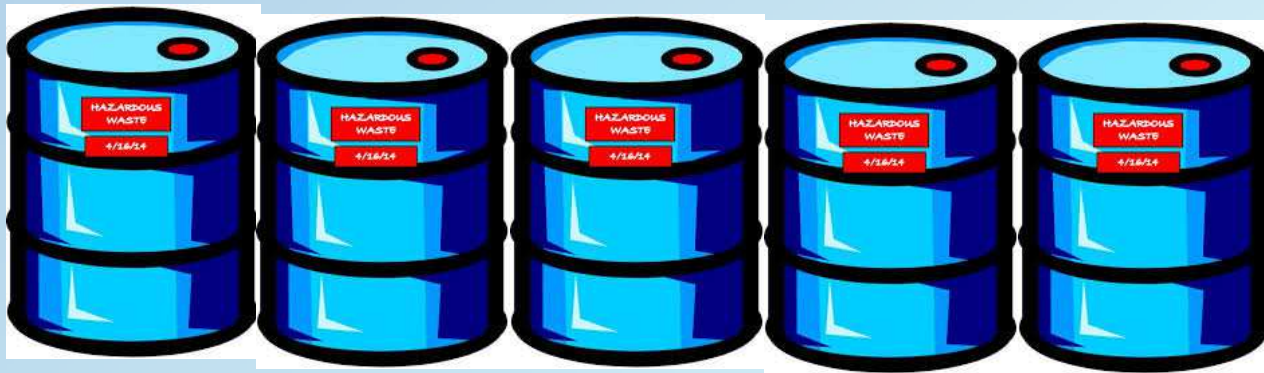
**Wastes are properly disposed under other
regulations.**

**Records of waste characterization and generator
status are maintained for 3 years.**

Hazardous Waste Generator Status

Small Quantity Generator (SQG)

**Monthly hazardous waste generation 220 lbs
– 2,200 lbs. or $\sim 1/2$ to 5 drums.**



**Total hazardous waste accumulation always
< 13,200 pounds ~ 30 drums.**

Hazardous Waste Generator Status

Large Quantity Generator (LQG)

Generates 2200 pounds non-acute hazardous waste per month



or

Generates 2.2 pounds (~ 1 liter) of acutely or severely toxic waste per month



Hazardous Waste Generator Status

Calculating Amount of Hazardous Waste Generated

Calculate the amount generated, not the amount shipped

Calculate the amount in pounds or kilograms

Include hazardous waste treated and/or disposed on-site
unless it is hard piped to POTW

Do not include hazardous waste managed as a universal waste

Do not include waste specifically excluded from Part 111
(scrap metal being recycled, fuel being recycled, or POTW
approved direct discharges)

Do not include liquid industrial waste and/or used oil



Hazardous Waste Generator Status

Calculating Amount of Hazardous Waste Generated

Review total/maximum amount of hazardous waste generated and accumulated at any 1 time during the month.

Compare amount of hazardous waste generated and total accumulated during the month to the CESQG, SQG, and LQG definitions/limits.

Generator limits are found in Rule 306 of the Part 111 rules.



Need Help or Resources?

Go to www.michigan.gov/deqwaste

Go to www.michigan.gov/ehsguide

Contact the DEQ EAC at 1-800-662-9278

Search the DEQ Publication Center

Contact DEQ district waste inspection staff

Contact hazardous waste vendors

Contact waste consultants



Questions

**Feel free to ask questions via your
question/chat box**

MDEQ Hazardous Waste Generator Webinar - Self Certification

MDEQ Hazardous Waste Generator Webinar Trainer - Self Certification	
I, _____ <small>Print signatory's name here</small>	
certify that I have viewed the entirety of the Michigan Department of Environmental Quality (MDEQ), Hazardous Waste Webinars listed below, for which I am a signatory, to gain a general understanding of the hazardous waste generator requirements under Part 111, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act, Act 461 of 1994, as amended, and the rules promulgated thereunder. I further certify that I recognize that this information is general and it is essential for me to evaluate the need for additional site-specific training as part of a site-specific hazardous waste training program. I recognize that additional site-specific training is necessary to develop such a hazardous waste program for my facility and for me to be qualified to provide such training to on-site personnel to perform daily duties related to the generation and management of hazardous waste.	
Introduction to Hazardous Waste Regulations: Waste Characterization and Generator Status	
Signature _____	Date Training Viewed _____
Introduction to Hazardous Waste Regulations: Hazardous Waste Generator Accumulation, Storage, and Labeling Requirements	
Signature _____	Date Training Viewed _____
Introduction to Hazardous Waste Regulations: Hazardous Waste Generator Recordkeeping & Inspection	
Signature _____	Date Training Viewed _____

April 10, 2012





www.michigan.gov/deqworkshops

**THANK YOU
FOR PROTECTING
MICHIGAN'S
ENVIRONMENT!**